Applicant: Donald James McCrady, Paul F. Ringseth and Bimal Mehta
Title: Data Flow Analysis of Transactional Processes
Filed: Herewith Docket No.: MSFT-1966
Attorney: Christos A. Ioannidi Phone Number: (215) 568-3100

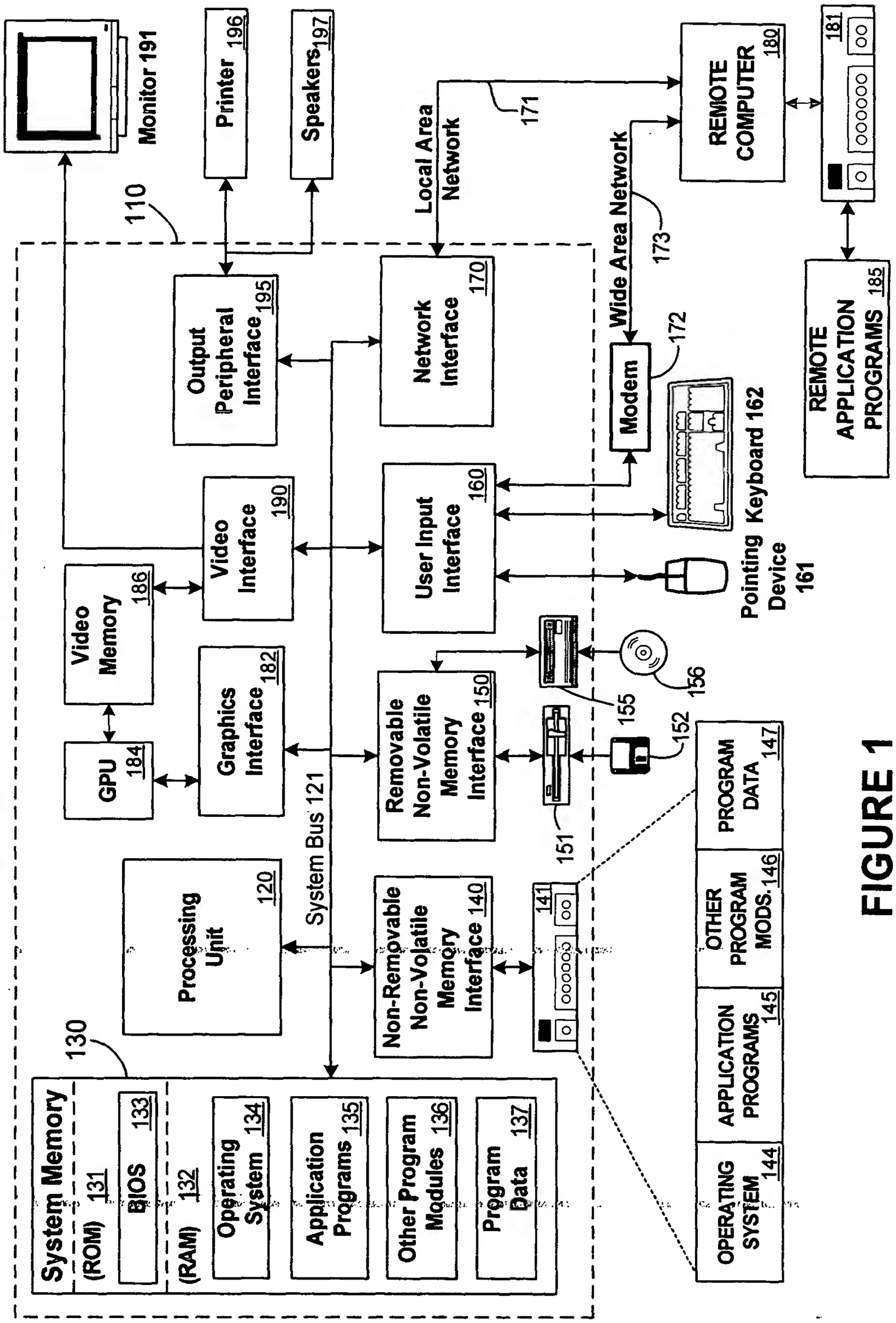

FIGURE 1

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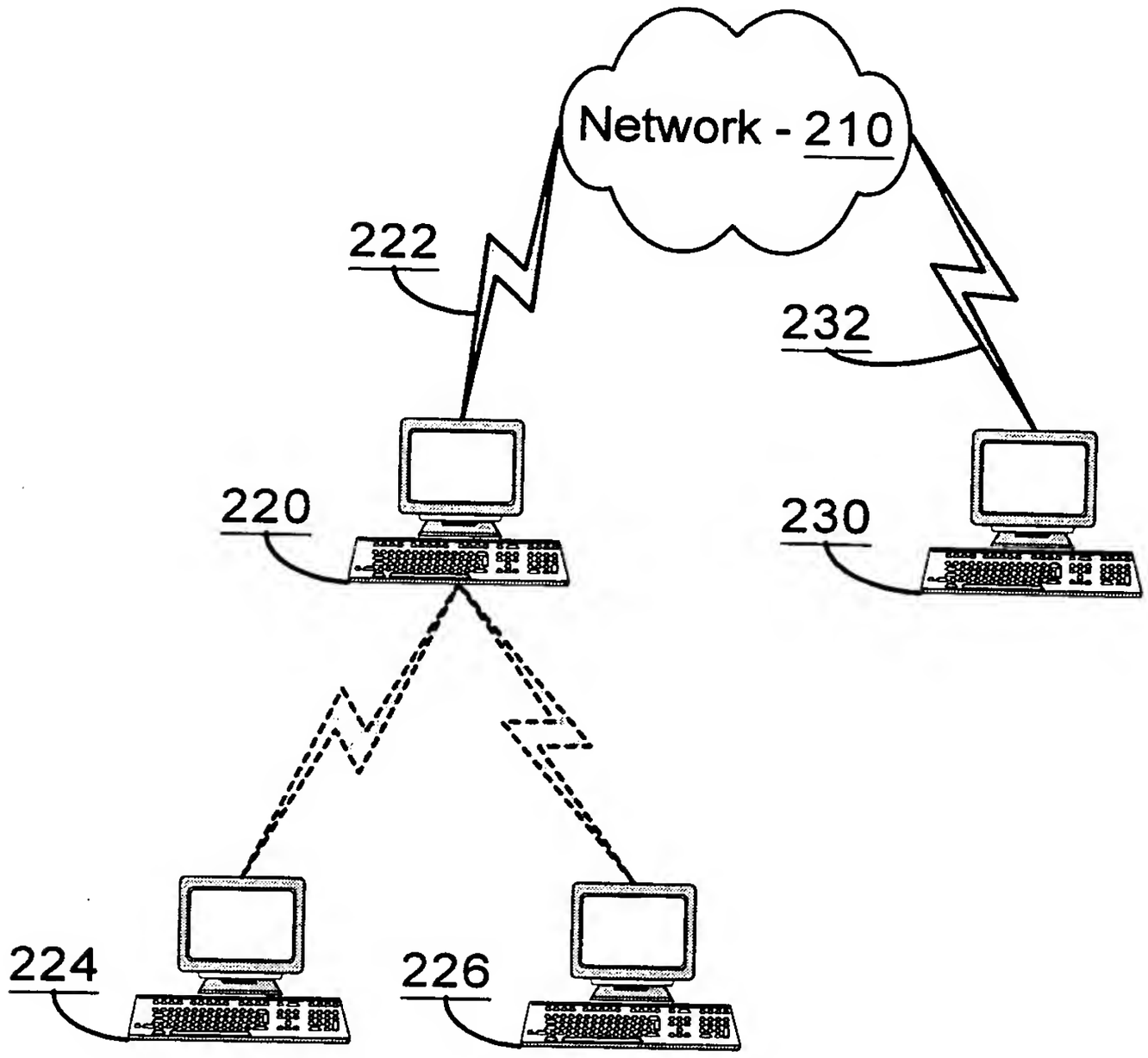

FIGURE 2

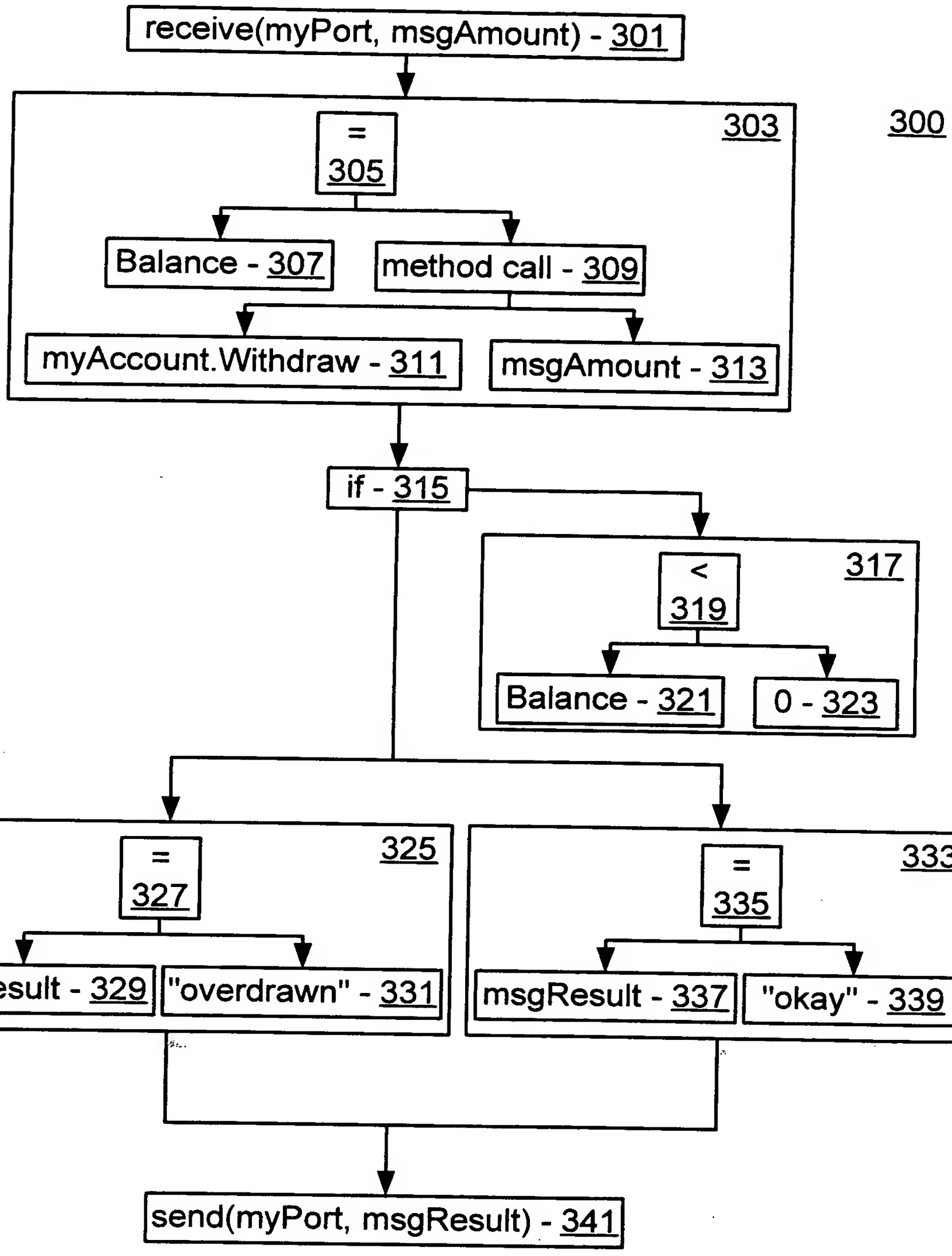
receive(myPort, msgAmount) - 301
303
=
305
Balance - 307
method call - 309
myAccount.Withdraw - 311
msgAmount - 313
300
if - 315
317
<
319
Balance - 321
0 - 323
325
=
327
msgResult - 329
"overdrawn" - 331
333
=
335
msgResult - 337
"okay" - 339
send(myPort, msgResult) - 341

FIGURE 3

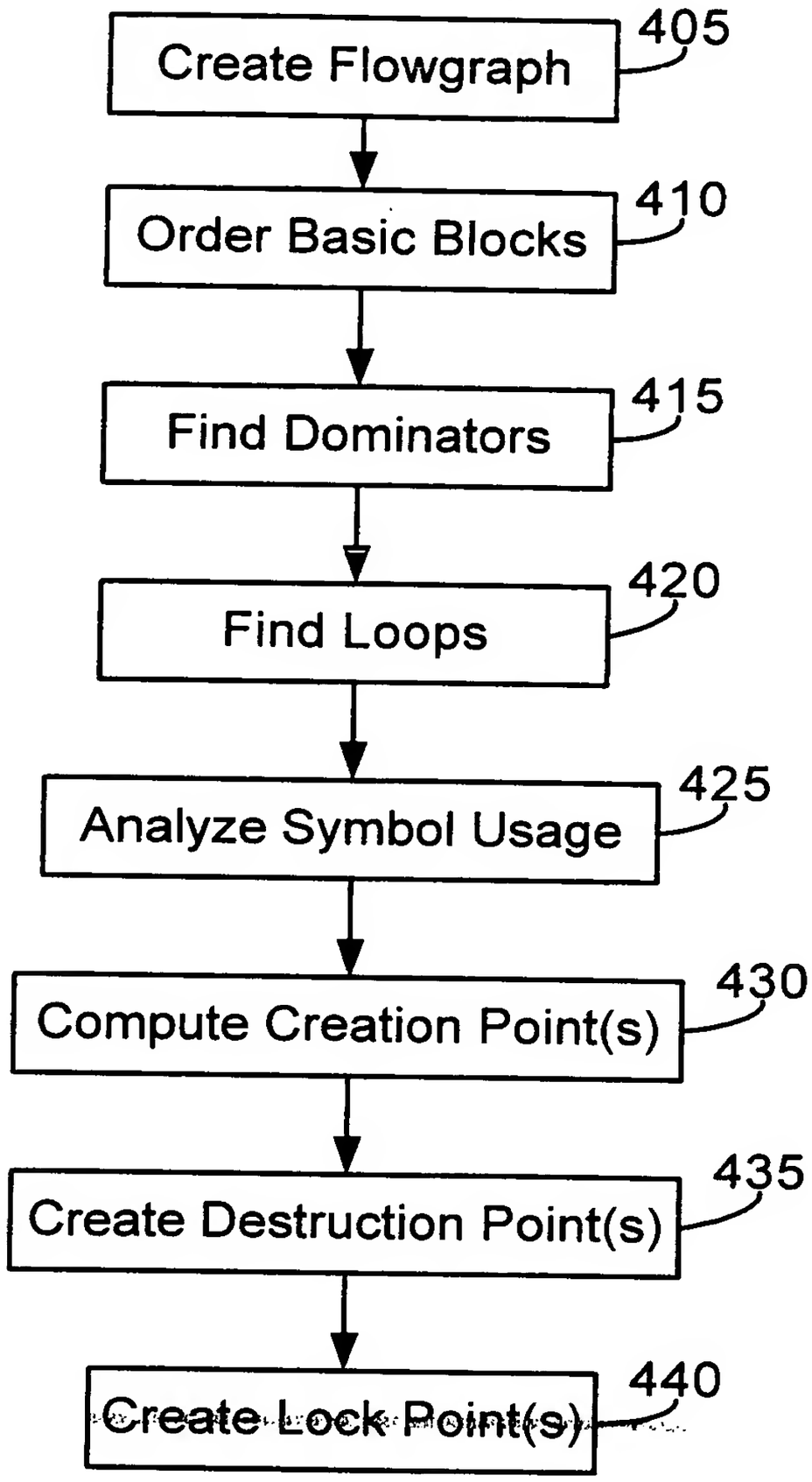
Create Flowgraph
405
400
Order Basic Blocks
410
Find Dominators
415
Find Loops
420
Analyze Symbol Usage
425
Compute Creation Point(s)
430
Create Destruction Point(s)
435
Create Lock Point(s)
440

FIGURE 4

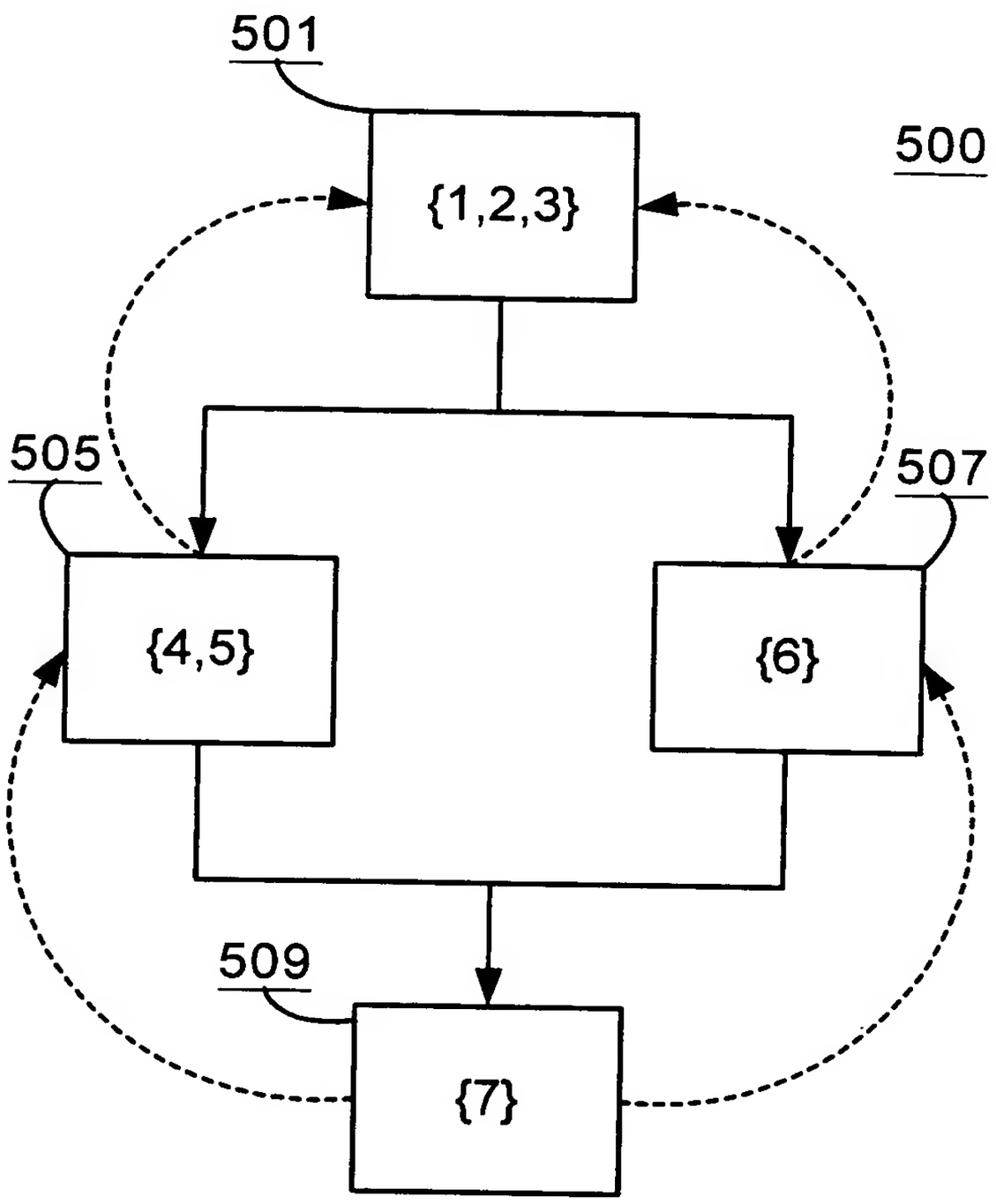

FIGURE 5

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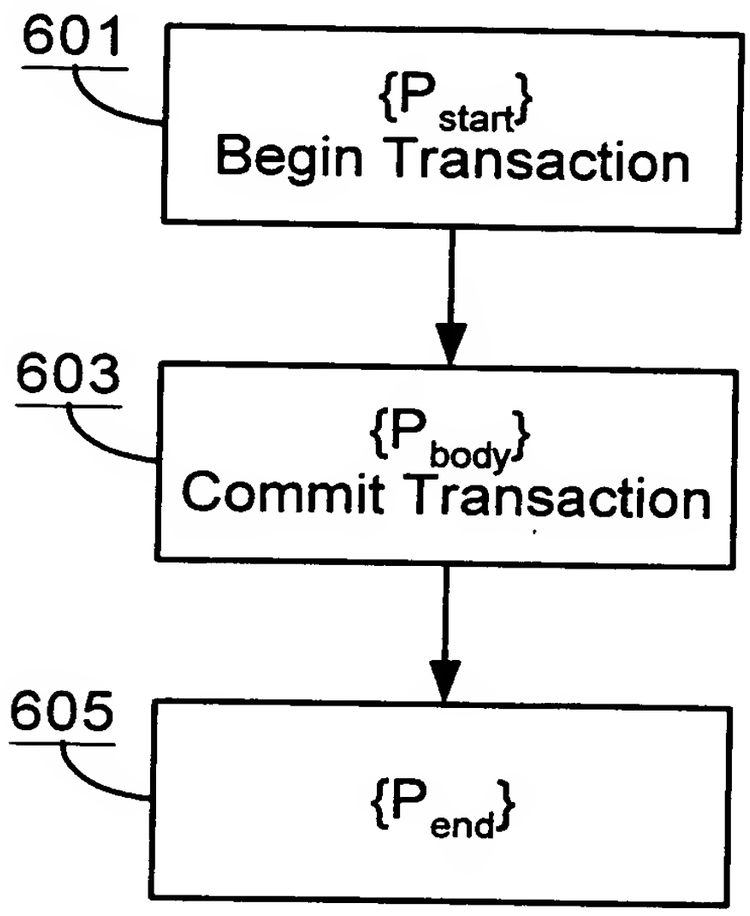

FIGURE 6A

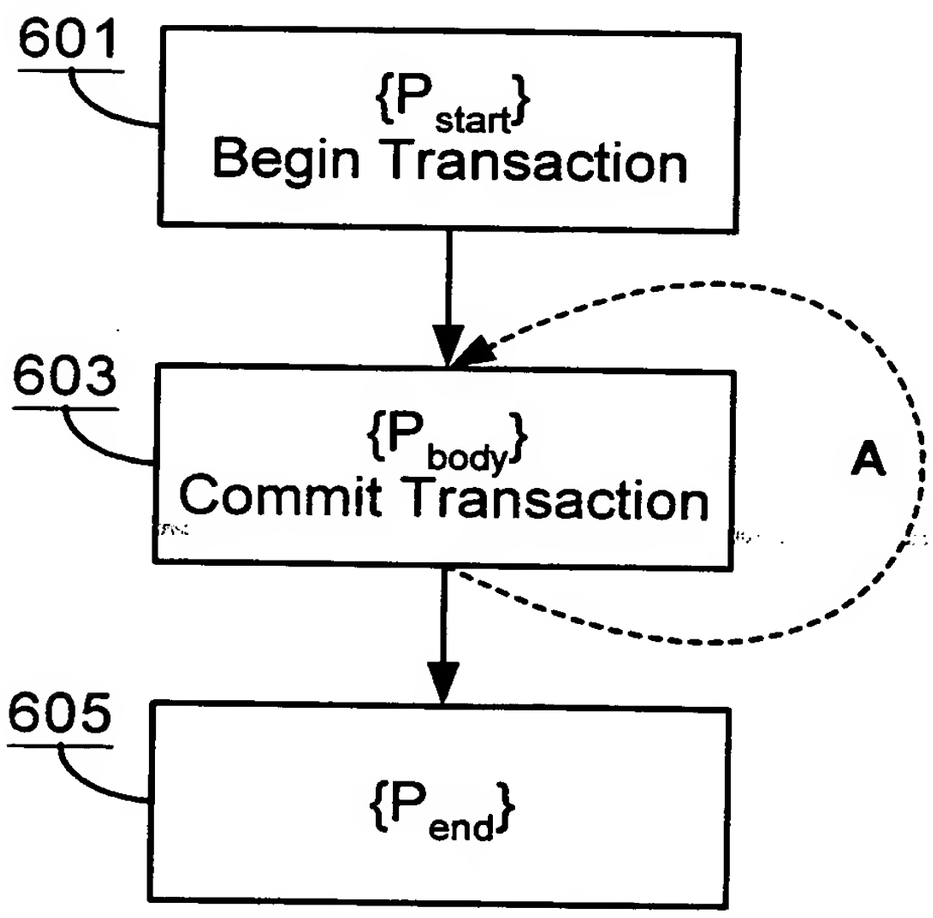

FIGURE 6B

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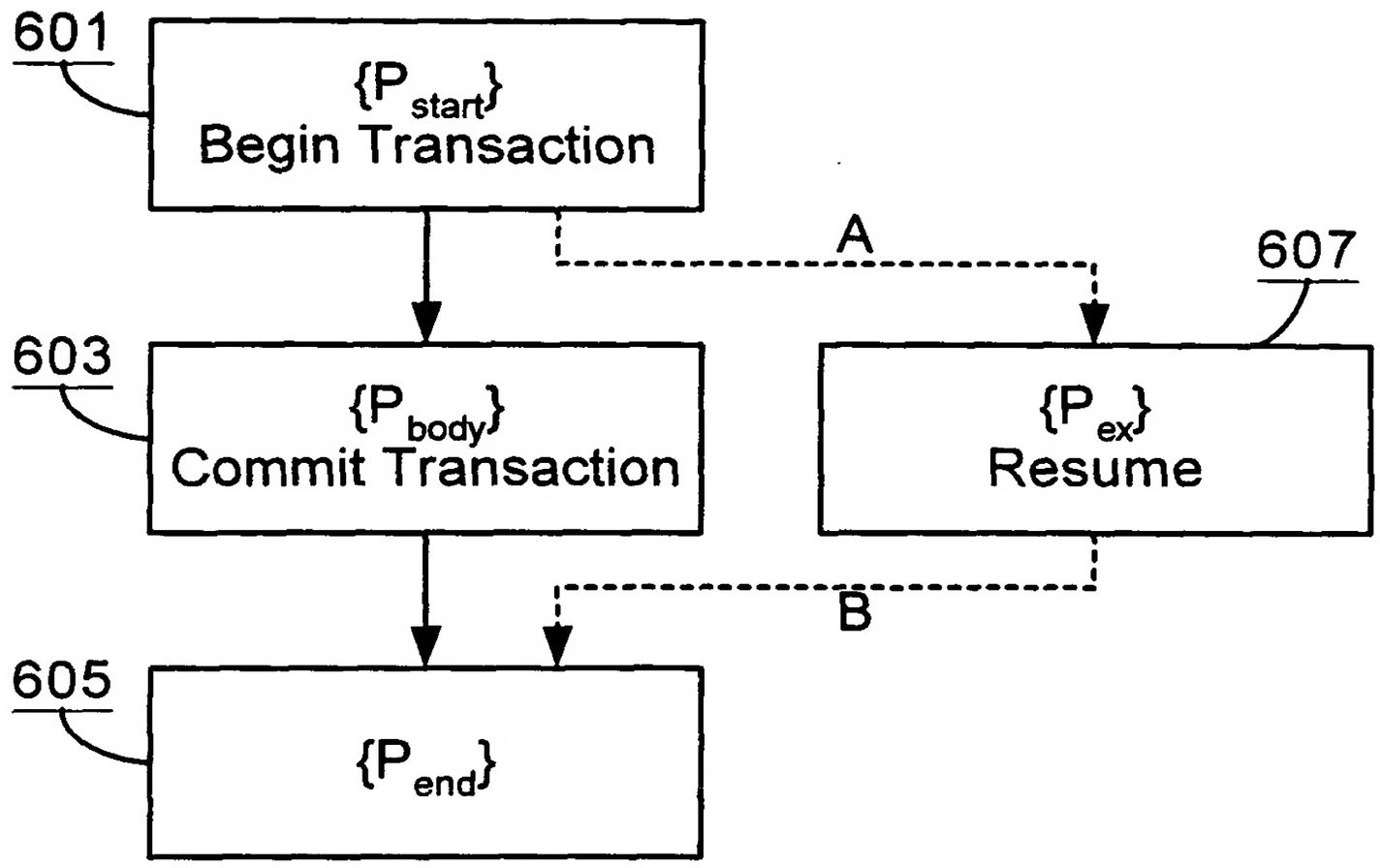

FIGURE 6C

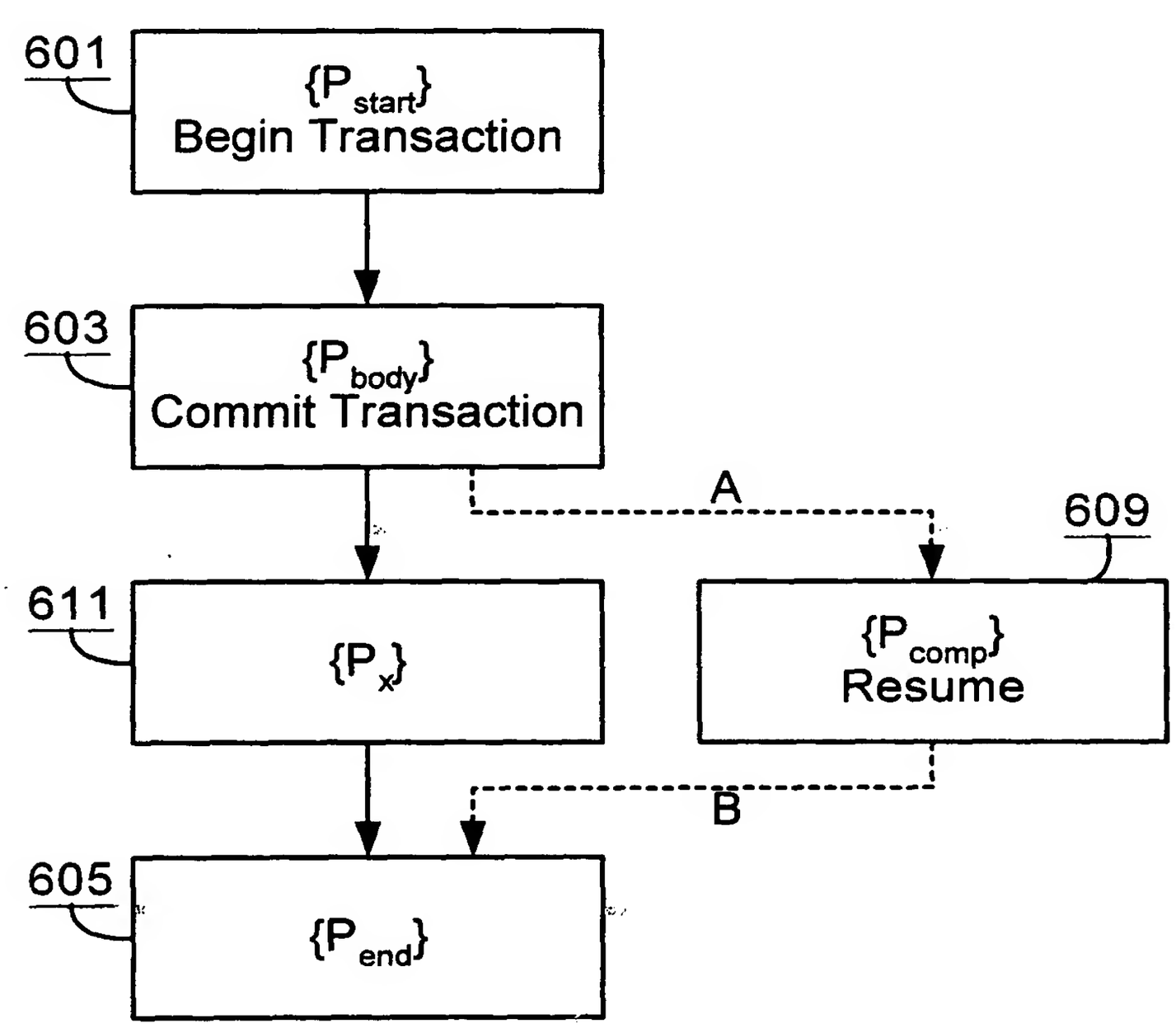

FIGURE 6D

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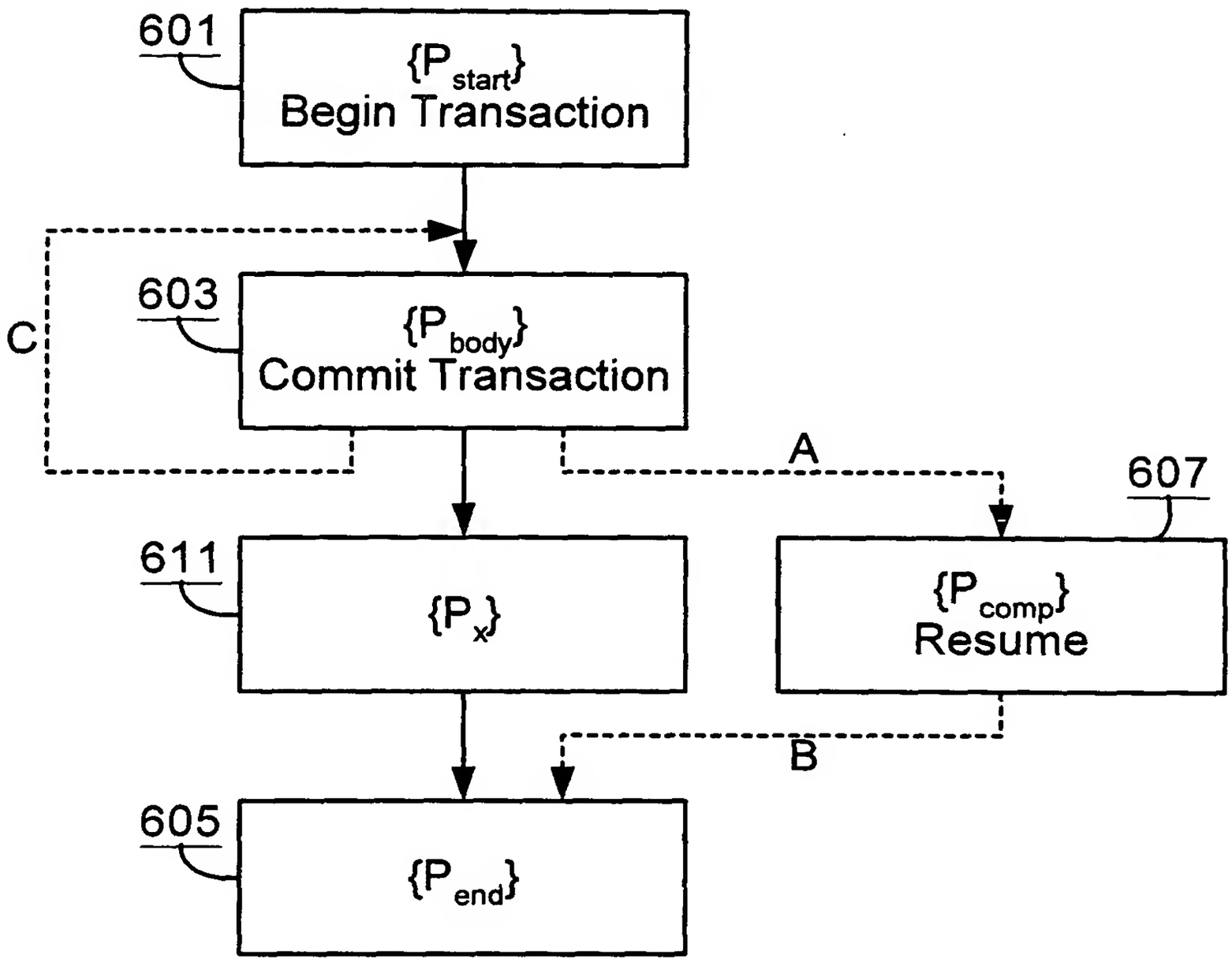

FIGURE 6E

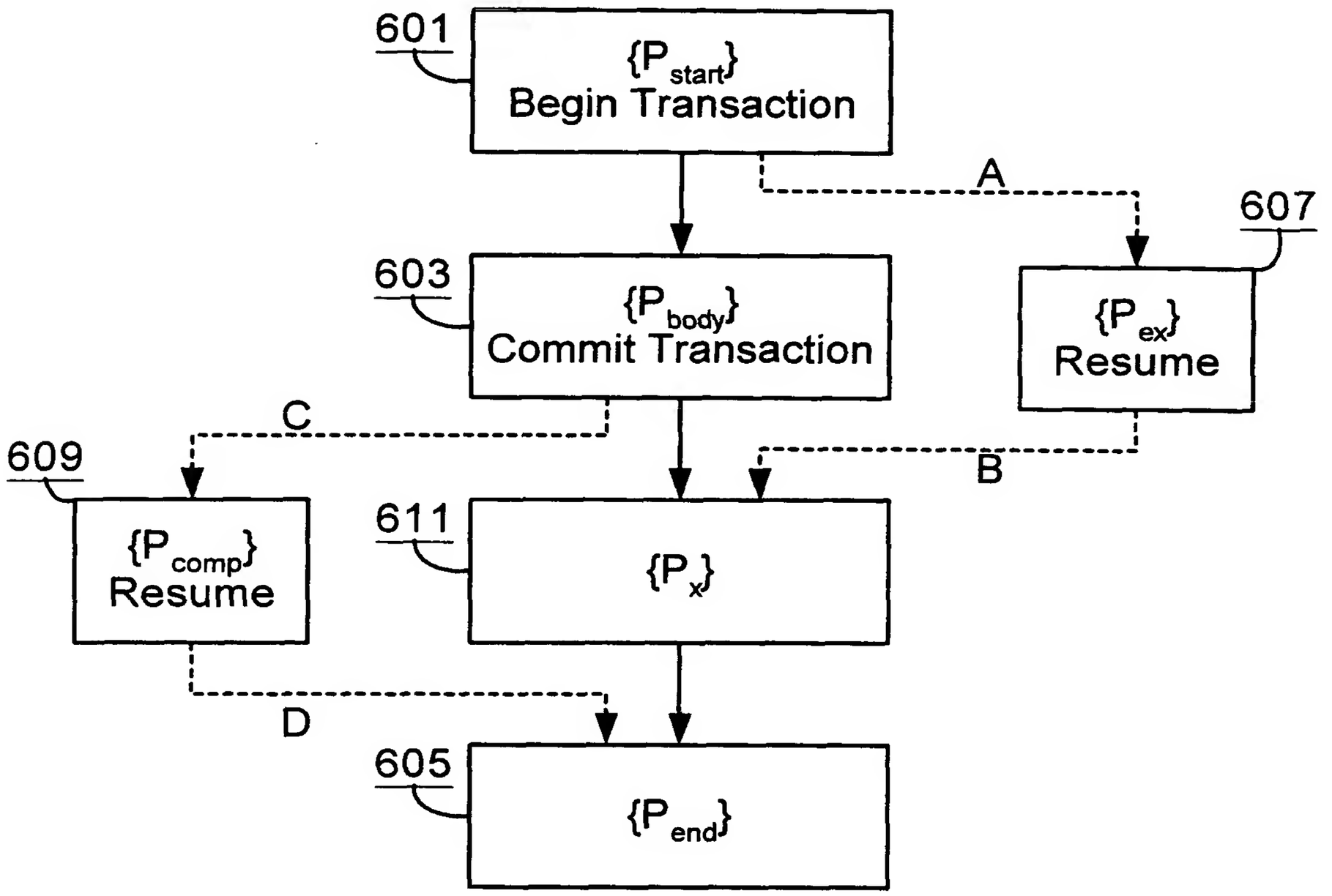
601
{P start}
Begin Transaction
A
607
{P ex}
Resume
603
{P body}
Commit Transaction
C
609
{P comp}
Resume
B
611
{P x}
D
605
{P end}

FIGURE 6F

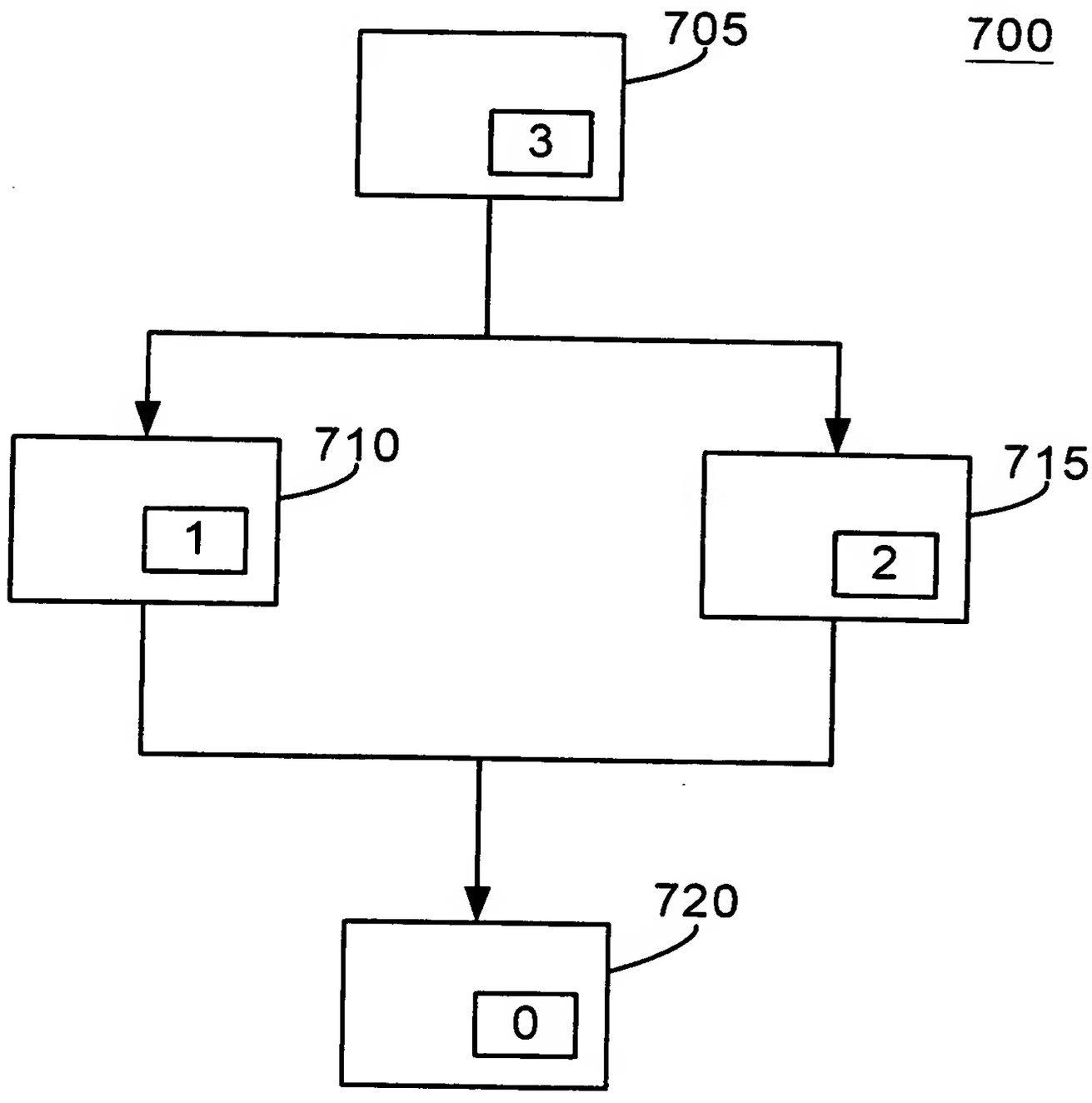

FIGURE 7

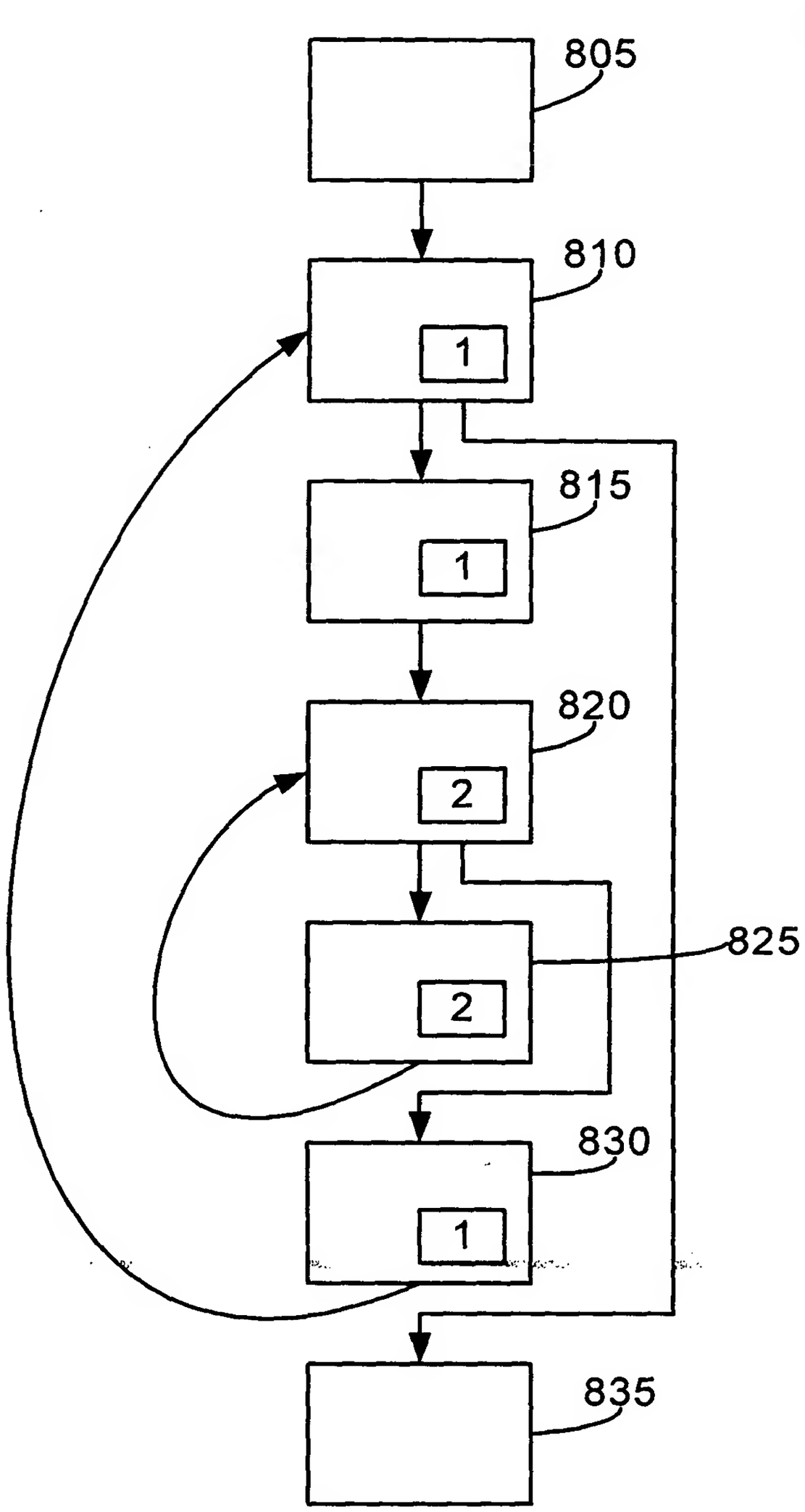

FIGURE 8

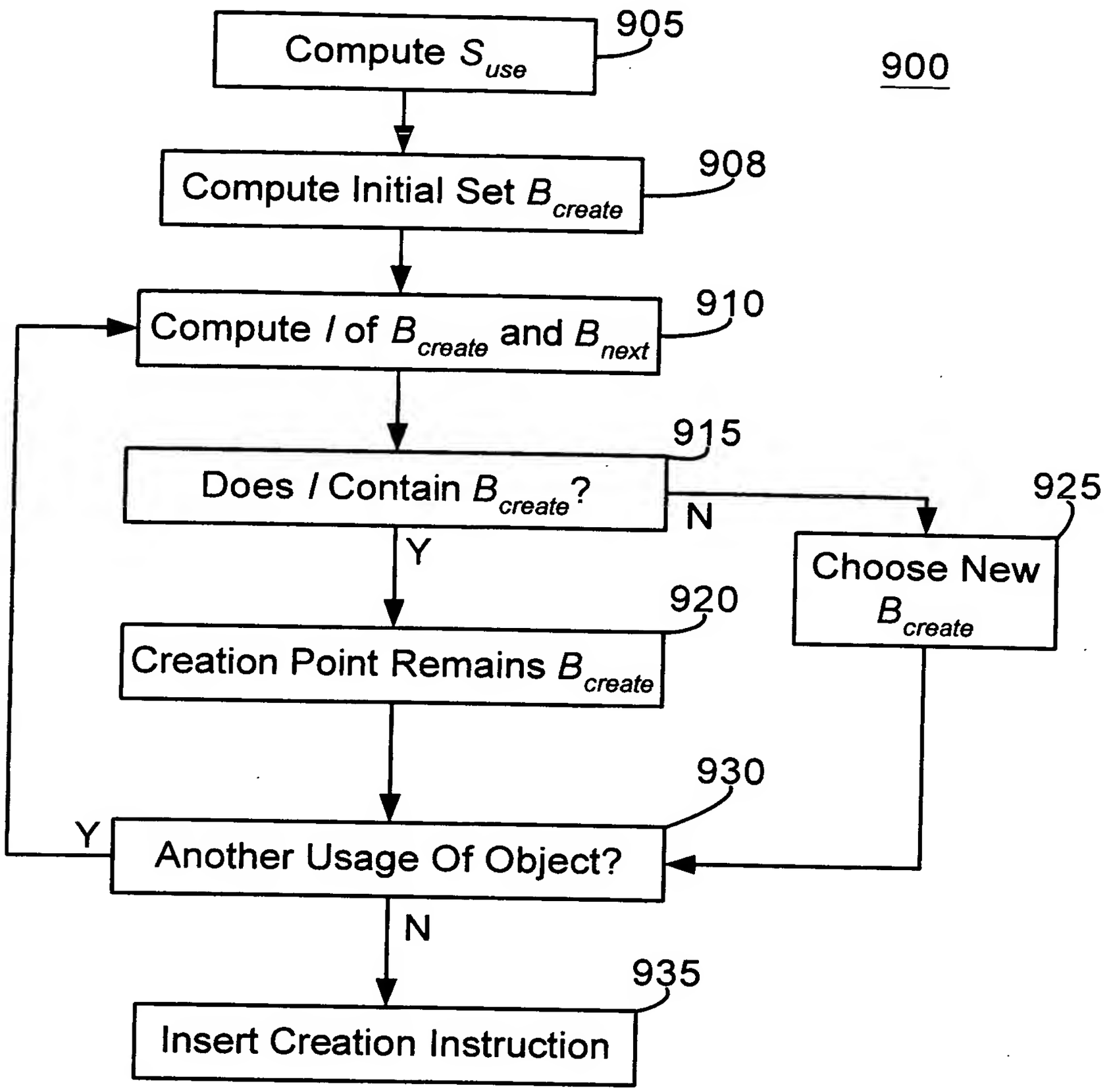
900
Compute S_{use}
905
Compute Initial Set B_{create}
908
Compute I of B_{create} and B_{next}
910
Does I Contain B_{create}?
915
N
Y
Choose New B_{create}
925
Creation Point Remains B_{create}
920
Another Usage Of Object?
930
Y
N
Insert Creation Instruction
935

FIGURE 9

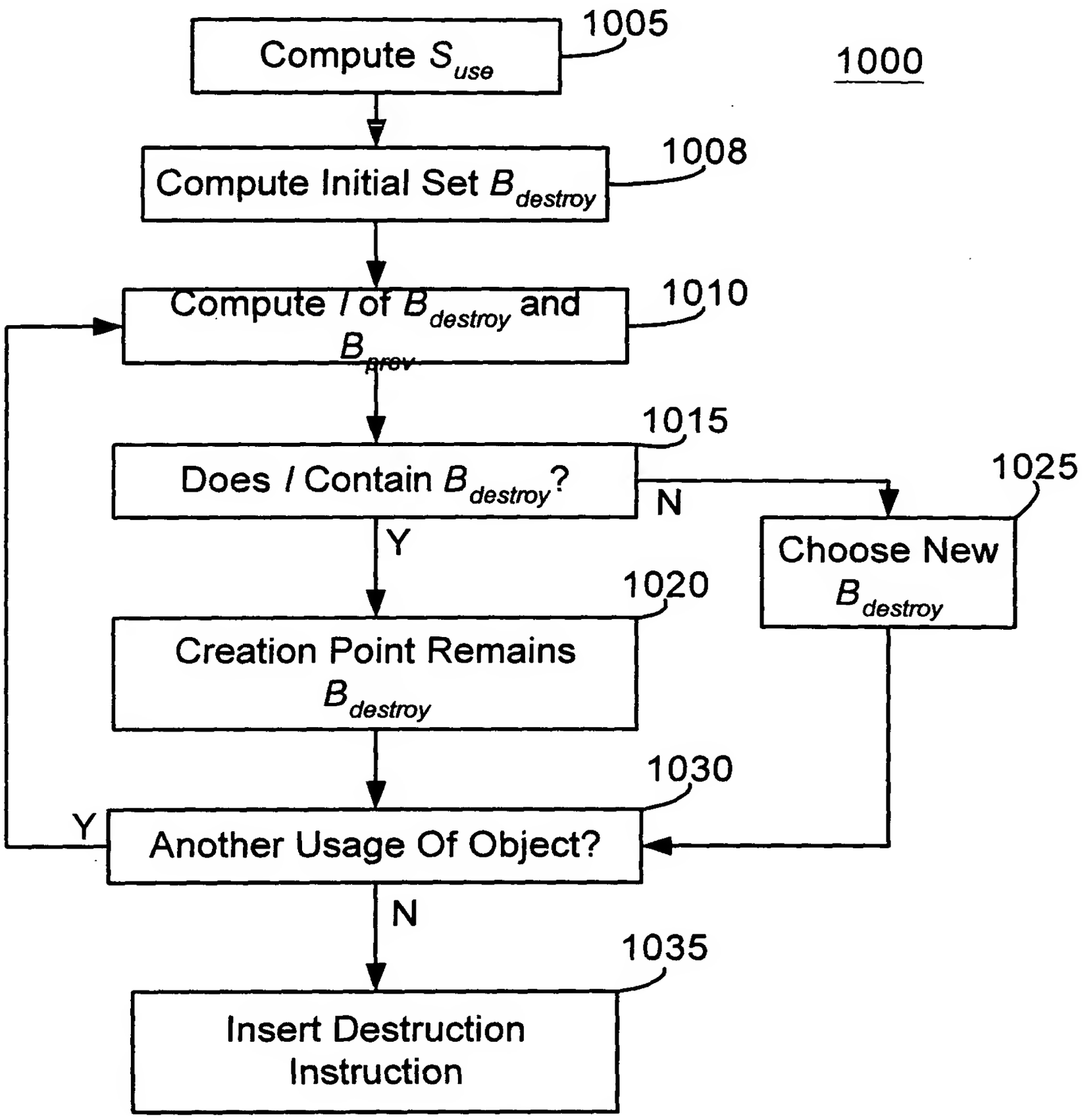
1000
Compute S_{use}
1005
Compute Initial Set $B_{destroy}$
1008
Compute I of $B_{destroy}$ and B_{prev}
1010
Does I Contain $B_{destroy}$?
1015
N
Y
Choose New $B_{destroy}$
1025
Creation Point Remains $B_{destroy}$
1020
Another Usage Of Object?
1030
Y
N
Insert Destruction Instruction
1035

FIGURE 10

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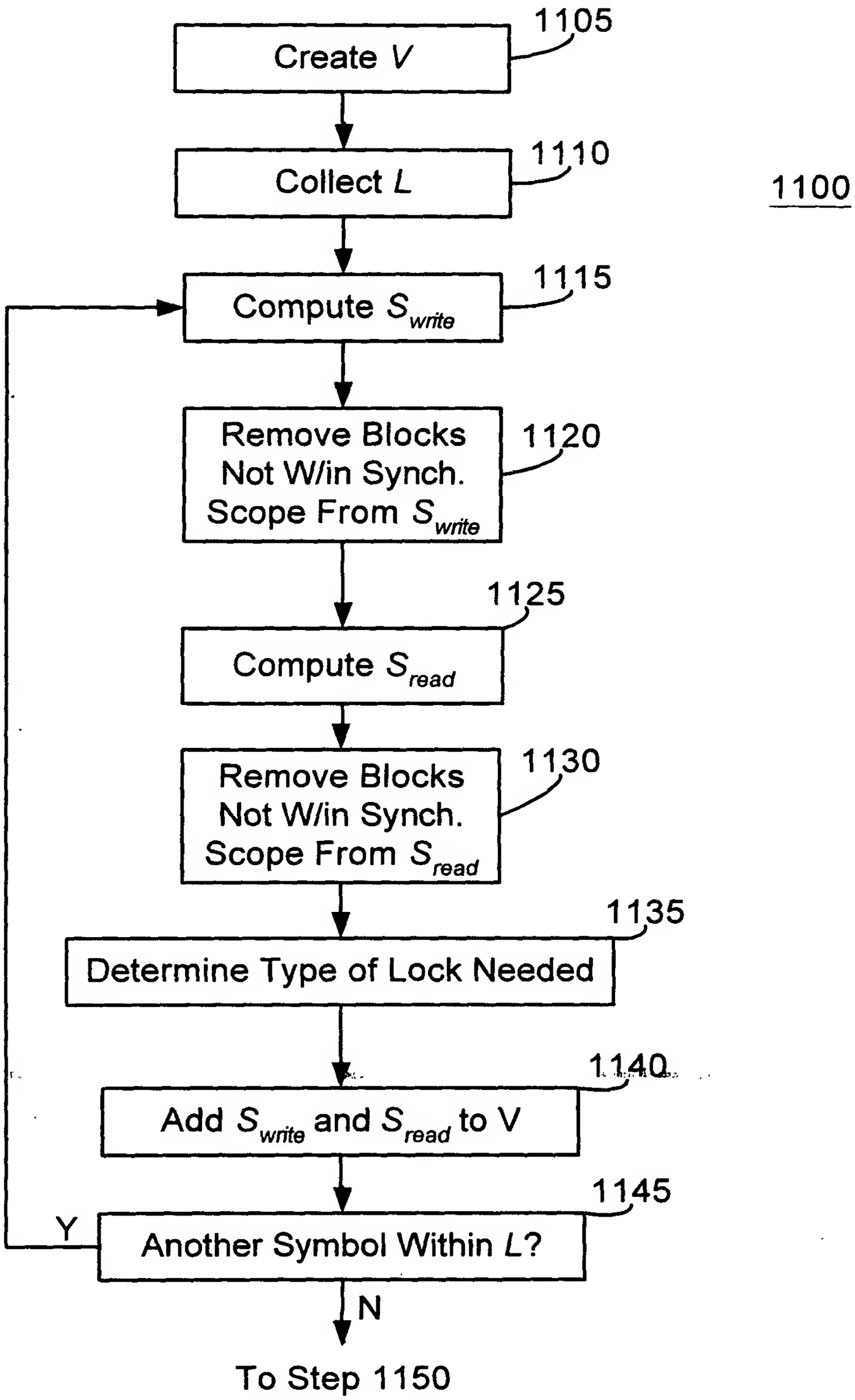

FIGURE 11A

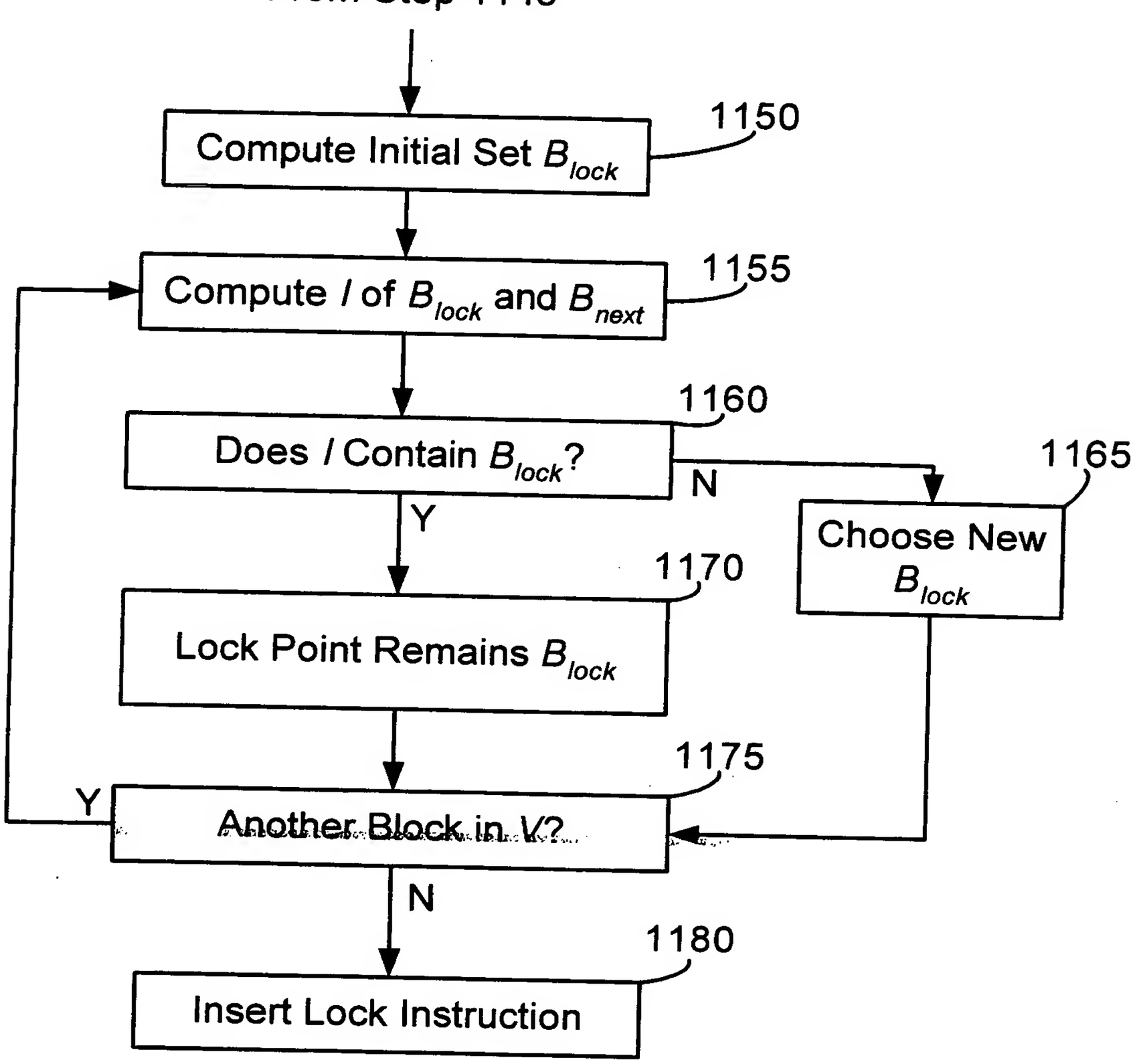
From Step 1145
Compute Initial Set B_{lock}
1150
Compute *I* of B_{lock} and B_{next}
1155
Does *I* Contain B_{lock}?
1160
N
Y
Choose New B_{lock}
1165
Lock Point Remains B_{lock}
1170
Another Block in *V*?
1175
Y
N
Insert Lock Instruction
1180

FIGURE 11B